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TEACHER'S GUIDE:

COMPANION TO

Bartholomew's Drawing-Book No. 2.

FOR TEACHERS AND STUDENTS USING BARTHOLOMEW'S
DRAWING-BOOKS.

BY

W. N. BARTHOLOMEW,

PROFESSOR OF DRAWING IN THE ENGLISH HIGH AND BOSTON NORMAL SCHOOL.

NEW YORK:

WOOLWORTH, AINSWORTH AND COMPANY.

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INTRODUCTORY REMARKS.

THE power to draw with ease and accuracy is the result of education. One great impediment to a more general acquisition of this power is the mistaken belief that peculiar faculties are required. Now and then one is found who makes great attainment with comparatively little effort; but do we not find this to be the case in all studies? Is there one in which all are equally successful? Those powers of mind necessary to success in drawing are just as uniformly distributed as are those powers necessary to success in any other study; and we may reasonably expect as uniform results in it. That this is not the case, is owing, not to a general want of capacity on the part of the pupils, but to *poor teaching*. Drawing is not usually so well taught as other studies. The common practice is, almost at the start, to set the pupils to copying pictures — *something pretty* — long before they have mastered the alphabet of the art. And even this is done without the least study of the examples to be drawn: their attention is never called to a careful investigation of the means used to express the ideas conveyed, and the reasons for their adoption are not given. The pupils

are told to make a copy of the original. The drawing is produced as an end, not as a means to an end. When the work is completed, the only thing gained is the picture: the pupil is just as ignorant as when he commenced. When we have as good teaching in drawing as in other studies, we shall have as good results following it.

Drawing is a language. In teaching the child to speak, the first thing is to discipline the ear to hear, the mind to recognize, and the tongue to utter, certain sounds and their combinations. In teaching drawing, a course analogous to this should be pursued. The eye should first be disciplined to see, the mind to recognize, and the hand to draw, lines of any given length, in any required position, and bearing any given relation to each other. This is the first step: and, until this is accomplished, it is unwise to take the next one; it can only result in failure.

My object in preparing this book, which is intended to be used in connection with the drawing-book, has been to present, to those who may be called upon to take charge of a class, a system of teaching based on the idea that drawing is a *study*, and that it can be *taught*. I have thought that the book would be more generally useful if I assumed that those who may use it have never given their attention to the study. I have, therefore, even in the drawing of simple lines, been careful to state the exact thing to be done, to explain fully just how it is to be done, and to give a reason for the course pursued.

Many suppose, that, in order to be successful as a teacher of drawing, one must be skilful in the use of the pencil.

This is an error. Good teaching does not depend upon this qualification. The *important thing* is, that the teacher should know exactly what is to be done in any given case, and be able to state just how it should be done, with all the why's and wherefore's connected with it. If the teacher is well qualified in this particular, he can *teach well*, whether he can *draw well*, or not. To gain this knowledge, there is no better way than to take the drawing-book used by the pupils, and, guided by the instruction given in the Manual, draw the examples in advance of the pupils from day to day. By adopting this course, the inexperienced teacher will not only become better acquainted with the examples to be drawn than he can be if he were to spend the same amount of time in any other way, but he will improve himself in the art. The difficulties which he will meet with in producing a correct drawing will enable him to direct others much better than he possibly could had he not, in his own experience, met the very difficulties which they must encounter. No one, whatever his qualifications, should attempt to conduct an exercise without making some preparation for the work. This is just as important for those who can draw well as it is for those who never handled a pencil. It is not possible for one, who has not made the example to be drawn a study, to teach his pupils as they ought to be taught.

The teacher, having prepared himself for his work, should see that his pupils are prepared for theirs, before they attempt its execution. It should be borne in mind, that correct execution depends upon a clear perception of the thing

to be done, and a perfect acquaintance with the means of doing it. In taking up an example, after the necessary instruction has been given, the class should be thoroughly questioned on those points to which their attention has been called. Their answers will show whether they are ready for their work, or not. With each "Lesson," we have given a series of questions and answers; but the teacher will understand, of course, that what we have given must be taken as a suggestion, and not as a thing to be literally followed. In preparing a series of questions, no one can anticipate what may be required to ascertain the knowledge possessed by the pupils, or what may be necessary to lead them to a clear understanding of the truths of which they may have a glimmering idea.

In teaching drawing, the blackboard is indispensable. Before the drawing exercise begins, the example which is to engage the attention of the class should be drawn upon the board, of sufficient size to be distinctly seen by all in the room; and each prominent point in the drawing should be lettered as in the copy. The teacher will find a drawing of this kind of great value in imparting instruction to the class; and it will be exceedingly useful as a means of determining what they know and what they do not know.

Pupils in the same class must be *kept together*. All should be at work on the same subject at the same time. The advantages of class instruction over individual instruction are just as great in drawing as in any other study; and the teacher should avail himself of these advantages for his own benefit as well as that of his class. When all are

at work on the same example, all need the same instruction, and the teacher will have time to give full and explicit directions, — time to examine the class to see if the information imparted has been received, understood, and acted upon, which would be impossible if all were not engaged on the same work at the same time.

So far as it is practicable in these early lessons, every point that is made and every line that is drawn should be dictated. If allowed to draw at will, the greater number of the class will be very likely to do so without thought; the exercise will be of little or no profit to them; and the results produced will be such as to exhaust the patience of the teacher far more than the effort that may be required to guide the class. Try the experiment; and, if you are satisfied with nothing short of the *best results*, you will adopt our suggestion. In case a lesson is lost through the absence of the pupil, or from any other cause, require the pupil to make it up in season for the next exercise, or let the work be omitted altogether. On no account let the pupils of the class be separated in their work.

In drawing an example, the lines may be dictated by the teacher or by the pupils. Suppose it is to be done by the pupils. After all necessary instruction has been given, and the class are ready to commence drawing, let the teacher call upon the class, or on some member of the class, to state the first thing to be done, and tell how it should be done. If all is correct, let the teacher draw on the board as instructed, and call upon the pupils to criticise his work when done. Then let the same thing be done by the class

in their books. The teacher then asks for further instruction, *What is the next thing to be done? and how is it to be done?* If rightly directed, let him do the work, call for criticism, and then let the pupils do what has been done by the teacher. In this way, let the work proceed to the end; the teacher in his drawing preceding the pupils in theirs by a single line.

One word as to rapidity of execution. Require the pupils to take all the time that may be necessary to do their work as well as it can be done by them. Let them learn to draw *accurately* before they are permitted to attempt rapidity of execution.

After what has been said, it is, perhaps, needless for us to add, that the teacher cannot give his attention to other matters during the hour devoted to drawing, and at the same time be faithful to his class. His pupils need constant care and attention; and this is especially true in these elementary lessons.

GENERAL INSTRUCTIONS AND REMARKS.

THE selection of a suitable pencil is a matter of the first importance. It is a common practice to provide the beginner in drawing with poor pencils; because they are supposed to be economical, and are thought to answer his purpose just as well as those of a superior quality. This is all a mistake. In the first place, a poor pencil is more expensive than a good one; and, in the second place, it will not serve his purpose as well. The lead of a poor pencil is easily broken in sharpening, and, in using, the point breaks under a slight pressure; and, again, it constantly needs cutting, to get rid of the particles of grit with which the lead is filled. One good pencil will outlast several poor ones. A poor pencil is *dear* at any price. The lead of a poor pencil lacks clearness, brilliancy, and strength of color: drawings produced with it always have a dirty, muddy look. The lead being filled with grit, it frequently cuts the surface of the paper; and the line produced is uneven, it being broader and darker in some parts than in others. And then, again, owing to its unevenness of temper, the same amount of pressure, in different cases, will produce different results.

When we consider that a good pencil costs but a few cents more than a poor one, and that it is impossible to produce a satisfactory drawing with the latter, it would seem that no one can long hesitate which of the two to purchase.

In my own practice, I have used the Eagle Pencil for some years past; and, having found it uniformly superior in quality, I have no hesitation in saying that it will fully meet the wants of the pupil; and I take pleasure in recommending it, believing it to be, quality considered, the cheapest pencil in the market.

Although there is a long list of pencils manufactured, of different degrees of hardness, the draughtsman really needs but two or three of the number in order to accomplish any thing that he is called upon to do with the pencil. For simple outline, and for all work such as is found in Books 1 and 2, use the H pencil, or its equivalent, No. 3. The lettered pencils are superior in quality to the numbered.

If the pupils are quite young, it is advisable, at first certainly, for the teacher to keep and mend the pencils. The pencils used for drawing should be kept *exclusively* for this purpose.

In sharpening a pencil for outline drawing, the wood should be cut back an inch, at least, from the point; the taper should be *regular*, and the point fine. Many suppose, that, in order to make a broad line, the pencil must be blunt. This is a mistake. A broad line may be made with a finely-pointed pencil as readily as with a blunt one. When it is required to make a broad line, hold the pencil in the hand as in drawing, and on a piece of waste-paper grind down

the point slightly. This will leave a flat surface on one side, so that a broad line may be made with it, and at the same time the pencil will be so pointed that the eye can readily see the exact point of its contact with the paper, which cannot be done if a blunt point is used, as is often recommended.

A short pencil should never be used in drawing, as it cramps the hand to hold it. When, with the fingers in their proper position, the pencil is not long enough to allow the upper part to rest on that part of the hand near the knuckle-joint of the first finger, it should be laid aside for other purposes, or spliced out in some way for drawing. For this purpose, I make use of a light metallic tube, about the size of a lead-pencil, designed for a pen-holder.

Every pupil should be provided with a piece of rubber. That known as the "Diamond Rubber" is especially recommended. The form of this eraser makes it *exceedingly valuable* to the draughtsman. It is diamond-shaped. The angles being acute, if it is desired to erase a line lying in close proximity to others, it can easily be done without in the least endangering those which are to be preserved. The quality of this rubber is excellent; and its peculiar form adds very much to its value.

Beginners are inclined to use the eraser too freely, and they need to be cautioned against this error. It should never be used when it is possible to avoid it; and, to guard against the necessity, the utmost care must be exercised in drawing, and some discretion used as to the time when the rubber should be applied. It is always best to let all incor-

rect lines remain until their removal becomes an absolute necessity. Whenever a line is to be erased, protect those parts of the drawing lying near the line to be removed by covering them with a piece of stiff writing-paper before applying the rubber.

When the pupil is engaged in drawing, the lower side of the book should be placed parallel with the front side of the desk, and distant from it at least one-half the width of the book. The pupil should face the desk, with the body erect, and the head inclined slightly forward; the left hand should be placed upon the upper part of the leaf on which the drawing is to be made, so as to press it firmly on those beneath.

The pencil should be held with an easy grip, between the first and second fingers and the thumb, keeping the fingers and the thumb nearly straight: the third and little fingers may be turned in towards the palm of the hand a little more than the others. The wrist, the side of the hand, and the side of the little finger, should rest firmly on the desk. With the hand placed, and the pencil held, in this way, lines may be drawn with freedom in any required direction; which cannot be done if the pencil is held and the hand is placed as is usual in writing.

Before drawing a line, points should be placed to indicate where the line is to begin and where it is to terminate. By adopting this plan, many errors may be avoided. One gets a clear mental perception of the line before it is drawn; and, if it is wrong, the error is discovered in time to correct it. In drawing a line, the motion of the hand should be

either from the wrist, elbow, or shoulder, according to the length of the line to be drawn. The fore-arm should always be held as near as possible at right angles with the line to be drawn. The dots marking the extremities of lines should be made as light as is consistent with distinctness.

The numerals connected with the examples, in all cases, indicate the order in which the lines near which they are placed should be drawn. The letters are used as a matter of convenience in referring to lines and points. In no case, should the letters or numerals be copied by the pupils, as they detract very much from the beauty of the drawing.

In drawing lines, the pupil must be taught to depend upon the eye and hand alone. In no case should they be permitted to use a ruler, or other instrument, for this purpose. It is the *prime object* of these initiatory lessons to discipline the eye and hand; and, if instruments are used to assist in execution, this end is certain to be defeated.

Pupils should not be allowed to measure except by *special permission*; and, when the measure is used, it should be for the sole purpose of determining the correctness of work already executed.

It is recommended that the teacher keep the drawing-books in his possession. During the interval between the lessons, each book should be examined; and at the beginning of the next lesson the attention of the class should be directed to the most prominent errors discovered. In doing this, illustrate on the board. Something may be learned from *failure* as well as from success.

It is intended that each example in the copy-book should be drawn twice : first on the left half of the page, and then on the right. It may not, however, always be desirable to make the second drawing immediately after the first: this might in some cases be tedious. Avoid making the study irksome. If it is necessary to delay for a while the second drawing, in any case, to guard against this, let it be done.

INSTRUCTIONS

APPERTAINING TO THE EXAMPLES IN BOOK II.

LESSON I

THE lines forming Examples 1 and 2 of this lesson are *inclined lines*, sometimes called *oblique lines*.

What is an inclined line?

A line which is neither horizontal nor vertical is an inclined line.

What means are used to ascertain the inclination of a line?

The inclination of a line is determined by comparing it with a horizontal or a vertical line, or with both. In Ex. 1, the inclination of the line BC is compared with the lines AB and AC. The line AB gives the distance of the end B below the level of C, and the line AC the distance of the end C on the right of B. These two points determine the inclination of the line.

Where lines are used to assist in drawing other lines, by what name are they known?

They are called *guide-lines*.

This method of ascertaining the exact slope of a line is not confined to drawing from examples. In drawing from objects or from Nature, the same means are employed. Where these lines are not found in connection with the line to be drawn, a pencil held up before the eye answers the purpose. To the practical draughtsman, the mind supplies these lines: they are mentally before him; and, while he draws the line apparently without recourse to any such expedient, he in reality employs the very means here used.

Ex. 1. *Compared with AB, what is the length of AC?*

What, then, is the distance of B below the level of C, compared with the distance of C on the right of B?

How should we proceed in drawing the line BC?

First determine how far the point C is below the top of the page, and place a very light dot on the paper, somewhere on the left of C to indicate its distance below the top of the page; next determine how far the point B is from the left side of the page, and place a dot about where it is thought the point B should be placed. Then place a point for A, on a level with the point first placed, and vertically over the one last placed; next consider how far the point B is below the level of A, place a point for B, and draw AB. Then place a point for C on a level with A, and at a distance from A equal to the measure of the line representing AB, and then draw BC.

In drawing an inclined line, it is not indispensable that the guide-lines should be drawn. What is wanted, in *prac-*

tical drawing, is to secure the points corresponding to B, A, and C; and this may be done just as well without drawing the lines as by drawing them. In these initiatory lessons, however, it is best to require the pupils, for a while at least, to draw all lines used as guide-lines.

The teacher must see that the purpose of these lines is understood by the class, and that the pupils can, without assistance, use them in drawing any given line. Draw on the board a number of lines, varying in length and inclination, and call upon one or more of the pupils to go to the board, and make a drawing of them; the pupil supplying the auxiliary lines in the copy, as well as in his drawing of it. If this can be done successfully by the class, they are prepared to go on with the lesson; but, if they cannot do this, all that they may do in their books, if allowed to go on, will be a mere mechanical imitation of the example. This is not *drawing*, it is *copying*; and little good will it do them. This method of determining the inclination of a line is a very easy thing, even for a child, to understand, and yet it is a very important thing to know; and it is hoped that the teacher will practise the class as proposed until it is evident they understand the use of these lines, and can apply their knowledge in drawing any given line.

Should the line BC be drawn with an upward or with a downward stroke?

This line may be drawn either way with ease, but perhaps most conveniently with an upward stroke. In either

case, the arm should be placed on the desk so as to bring the fore-arm as nearly as possible at right angles to the line.

Almost all inclined lines can be drawn more easily and accurately with a downward than with an upward stroke. Suppose that it was required to draw a line from D (see Ex. 4), or from any point between D and E, through P, the line could be drawn with more freedom with an upward than with a downward stroke; but, if it was required to draw a line from any other point in the sides of the square through P, it could be done more conveniently and more correctly with a downward stroke.

It will be impossible to give particular directions as to how every line should be drawn in these lessons: neither is it necessary. Guided by this general statement, the teacher will find no difficulty in directing the class how any given line should be drawn.

In placing points to mark the extremities and divisions of lines, they should in all cases be made *very light*. All that is necessary is a dot just large enough and dark enough to be visible.

What relation do the lines BC, HJ, and the remaining lines in this example, bear to each other?

How are their extremities situated with regard to each other?

What is the distance between the extremities B and H, compared with the measure of the line AB?

Are all lines in this example equally distant from each other?

Having drawn BC, how are you to proceed in drawing the remaining lines?

The lines are to be drawn in the order indicated by the numerals. In drawing HJ, first place the point H directly under B, and as far from it as one-fourth the measure of AB; next place the point J directly under C, and as far from it as H is from B; and then connect these points. All other lines are to be drawn as suggested by the drawing of HJ.

When drawing inclined lines, the pupil is often tempted to turn the book so as to bring the line to be drawn into a horizontal position: this should not be allowed. If permitted to do this, his drawing will not be as correct as it otherwise would be, for the reason that it is simply impossible for any one to judge as correctly of the position of points and lines, and of their relation to each other, with the book turned, as he can with the book placed as recommended.

In drawing the examples of this lesson, especial care should be taken to have the pupils place their drawings on the page, with respect to each other, as they are placed in the copy. If this is neglected, even though the drawing of each example be perfect, the general appearance of the whole will be any thing but pleasing.

One great element of beauty in a design consists in the proper arrangement of all the parts: each part may be well drawn; but, if the parts are unskilfully arranged, the drawing fails to please. The most simple thing may be made to delight the eye if this principle is observed. Even a few straight lines, having no real connection with each other, may be so grouped as to be attractive.

Neither the numerals, nor the letters connected with the examples, should, in any case, be copied. They disfigure the drawing, and are only allowed in the copy on account of the assistance they render in indicating the order in which the lines are to be drawn, and in designating the particular lines referred to in giving instruction.

It is hoped that the teacher will adopt the suggestion made in the introductory remarks, and dictate the lines as they are drawn. If, however, this is not thought advisable, he should at least be careful to see that they are drawn in accordance with the instructions given. That they should be thus drawn is a matter of importance, as the course pointed out is the most convenient one, and the one most likely to secure correctness and neatness of execution.

Ex. 2. What is the distance between the points C and D, compared with AC?

What is the length of DE, compared with AC?

What is the length of EF, compared with DE?

How are you to proceed in making a drawing of the line DF?

First place the point D on a level with C, and as far from it as one-half the measure of AC; next place the point E on a level with D, and as far from it as C is from A, and then draw DE; next place the point F directly under E, and as far from it as D is from E, and draw EF, and then DF.

How are you to proceed in drawing the remaining lines in this example?

First place the point S directly under D, and on a level with J; next place the point T directly under F, and as far from it as S is from D; and then connect these points. In drawing the remaining lines, proceed as in drawing ST.

In making the second drawing of these examples, if thought advisable by the teacher, the pupils may be required to change the inclination of the lines. In case a change is made in this respect, the page will present the best appearance if it is done either by increasing or diminishing the length of the lines corresponding to AB, Ex. 1; making them, for example, one-third or one-fourth longer or shorter than AB. It must be understood, however, that, if any change is made in one group of lines, a corresponding change must be made in the other: otherwise the harmony that now exists between them will be disturbed, and the general appearance of the page materially injured.

Ex. 3. The figure forming this example is called a *triangle*.

What is a triangle?

A triangle is a plane figure, having three sides.

What name is given to every plane figure having but three sides?

What is the highest point in a triangle called?

It is called its *vertex*.

What letter marks the vertex of this triangle?

The letter A.

What is the lower side of a triangle called?

It is called its *base*.

Name the base of this triangle.

CD is its base.

How high is the vertex of this triangle above its base, compared with the measure of its base?

Its height is equal to one-half the measure of its base.

Over what point in the base is the vertex?

It is over the middle point of the base.

What is the measure of the side CA, compared with the side AD?

The sides are equal.

What relation does the base of this triangle bear to the point P in Ex. 1, and Z in Ex. 2?

It is on a level with these points, and its extremities are equally distant from them.

How should you proceed in drawing this example?

First determine the proper place on the page for the point C, and there place a dot; next consider where the point D should be placed, and make a dot to represent this extremity of the line. Then draw CD; next place a point

as B in the middle of CD, and, vertically over it, place a point as A, at a distance from B equal to the measure of CB. Then draw AB, AD, and AC, in the order named.

Ex. 4. The lines AC and DB, in this example, are called *diagonals*.

What is a diagonal?

A diagonal is a straight line connecting the vertices of any two angles in a plane figure that are not adjacent.

Let the teacher draw on the board a polygon having more than four sides, and further illustrate the meaning of the term by drawing its diagonals.

At what point in a square do its diagonals cross?

How, then, may the middle point in a square be determined?

How is this example to be drawn?

First determine the proper place on the page for the point A, and then place this point; next, keeping in mind the length of the side AB, place the point B directly under A, and then draw AB; next place the point C on a level with A, and as far from A as B is from A, and then draw AC; next place the point D directly under C, and on a level with B, and draw CD, and then BD; next draw AD; then place the point P in the diagonal AD, and on a line with the points B and C; and, finally, draw BC.

In drawing any square in the position of that in this example, proceed as here instructed. Hereafter we shall not point out in detail the course to be taken in drawing

this figure. The teacher, however, should require the pupils to do this, until fully satisfied they are perfectly familiar with the course to be pursued.

Ex. 5. *Is the figure FOLJ, in this example, a square?*

Why?

Where in the sides of the outer square are the points F, O, L, and J?

How is this example to be drawn?

First draw the square ENKH; then place points in the middle of each of its sides; next draw the sides of the square FOLJ, in the order indicated by the numerals.

LESSON II.

We begin in this lesson the drawing of a series of ornamental forms. That these examples are pleasing to the eye is owing mainly to the regularity of their parts as to size and form, and to the balanced relation of the parts to each other. The attention of the class should be called to this fact, and its truth should be made apparent. For this purpose, take Ex. 1 of this lesson as a subject, and draw it on the board, making the triangles to differ somewhat in size and form, and place the smaller triangles within the larger ones irregularly; or let the triangles be of the same size and form, and simply throw them out of balance; and the truth of the statement will be obvious.

A knowledge of this fact will add to the interest of the exercise; and more care is likely to be taken on the part of the pupils to secure these results, if their importance is known. And not only this: it will give them some insight into the principles of the art they are practising. With a knowledge of this fact, they may themselves attempt the design of simple ornamental forms with some hope of success. Without it, they would work in the dark, with no prospect of securing a desirable result. After a little study and practice in drawing these examples, the pupils should be encouraged to make an effort in the way of design. In doing this, it will be of assistance to them to cut out of stiff paper a number of squares and triangles, and then arrange them as fancy may suggest; and, when a pleasing form is obtained, it may be copied. Suppose half a dozen squares be cut, one inch or two inches on a side; make double that number of half the size, and an equal number one-fourth the size. With these pieces of paper a great variety of forms may be made. And then if, in addition to these, triangles be made by cutting a number of squares of the same size into quarters diagonally, the number of forms that may be produced will be greatly augmented. The number of ornamental figures that may be made by the pupils may be increased to an indefinite extent, by cutting the square in ways that will suggest themselves to the teacher. It will be an interesting and a useful exercise to allow the pupils to draw their successful designs on the board.

The aid derived from the square used as a guide in draw-

ing these examples should be pointed out to the class. It is a great help in securing accuracy. If the most apt pupil in the class were to attempt to draw any one of them without the aid of the square, he would find great difficulty; and it is most likely that he would fail in producing any thing like an accurate drawing of it.

Ex. 1. What figures were used in making this example?

What is the object of the square ABCD?

Are the lines forming this square to be made light, or heavy?

Should all guide-lines be made very light?

Why?

Where in the square is the point J?

Where in the sides of the square are the points S and L, and the points corresponding to them?

Are the sides of the triangles N, O, P, and R parallel to the sides of the triangles enclosing them?

Is the space between the outlines of the large and small triangles of the same width at every point?

What is the width of the space compared with the line EH?

How is this example to be drawn?

First draw the square ABCD; then place points dividing each of its sides into four equal parts; next place the point J in the centre of the square; then draw the inclined lines completing the general outline of the figure, in the order indicated by the numerals; next draw the triangles N, O, P, and R, in the order here named; then erase as much of

the outline of the square as is indicated by the dotted lines in the example; and, finally, add the shade-lines.

In placing the point J in the centre of the square, the pupil should be guided by the points forming the extremities of the lines passing through J. This point must be on a line with the points S and K, L and N, E and F, H and I. If it cannot be so placed as to be on a line with these points, it follows that an error has been made in placing the points dividing the sides of the square. Before proceeding further, the error should be corrected: otherwise the figure will be distorted, and the equilibrium of the parts destroyed.

In drawing these examples, the pupils are instructed to draw the lines forming them in a given order. Now, it is not enough that they be told to pursue a certain course in drawing their lines: they must know the reasons which led to its adoption, in order that they may work intelligently, and, in the end, be able wisely to direct their own efforts.

In making the outline of any figure, and in drawing its detail, we should, as far as possible, so proceed that neither the pencil nor the hand will obstruct the view of what has been drawn, as the work proceeds. Speaking in general terms, we may say this end is secured by beginning at the upper left-hand corner of the drawing, and working gradually towards the lower right-hand corner. By adopting this course, we have an opportunity of forming correct judg-

ments. To pursue an opposite course would, in many instances, deprive us of the means of doing this. It was in view of this fact that the order in which the triangles N, O, P, and R should be drawn was determined. It should govern the pupil in deciding upon the course to pursue in drawing the lines forming the small triangles, and it should guide him in every case when he may be left to decide for himself what course to take in drawing his lines.

In determining the order in which the lines composing a figure should be drawn, there is another point to be considered. If there are certain lines in the drawing difficult to execute, crossing, or lying in close proximity to, others less difficult to make, the former, when practicable, should be drawn first. By taking this course, if failures are made, and it becomes necessary to erase a line, it can be done with less injury to the drawing than would otherwise be the case. As an illustration, take the inclined lines in this example. The line EF, owing to its position, is the most difficult line to draw; and therefore the pupil will be more likely to fail on this line than on the others. By taking this line first, if a failure is made, it can be erased without injury to the drawing, which would not be the case if the other lines were drawn first. In that event, every line it crossed would be likely to be more or less damaged, making it necessary to patch them up.

On these matters the class should be thoroughly informed. When this has been done, some one should be called upon to point out the lines in the order in which they should be

drawn, and state the reasons for the course adopted. That the class may receive the full benefit to be derived from this exercise, a drawing of the figure, large enough to be distinctly seen from all parts of the room, should be made upon the board previous to the beginning of the exercise.

A drawing of this description, properly lettered, should always be ready on the board at the beginning of every exercise in which a new example is taken up for study. This will not only be found useful in giving instruction, but, after instruction has been given, it may be used to show how much of the knowledge imparted has been retained by the class. If they cannot go to the board and point out just what is to be done, in every particular, and tell exactly how it is to be done, it is evident they need further information, or need to be informed again.

To give prominence to the figures, and that they may be readily recognized, the guide-lines in all cases are dotted. In drawing these lines, they should be made *continuous* and *very light*, so that such parts as are not wanted may be easily erased.

Pupils need to be frequently cautioned against the too free use of rubber. If proper care is exercised in drawing, they will seldom have occasion to use it. When it must be applied, require them to place a piece of writing-paper over that part of the drawing likely to be injured by it. If a piece about this size and form  be cut out of the paper, it will prove more serviceable as a protection in many cases.

In using it, place the paper on the drawing so that the line to be erased shall be the only line seen through the opening. If the paper is held firmly on the book while the rubber is used, there can be no chance of injury to other lines.

In putting the shade-lines into a drawing, proceed so as to avoid all danger of allowing the hand to come in contact with any of these lines, as a light touch from it will be quite likely to smut the drawing.

Ex. 2. *What is the object of the square ABCD in this example?*

Is it necessary that the lines forming the square be made very light? Why?

Where, in the sides of this square, are the points E, F, H, and I?

Where, in the diagonals EH and FI, are the points N, J, K, and L?

Where, in the sides of the square NJKL, are the points X, O, P, R, S, T, U, and V?

How is this example to be drawn?

Draw the square ABCD, and then place the points E, F, H, and I, in the centres of its sides; next draw the lines forming the square EFHI, in the order indicated by the numerals; then draw the diagonals EH and FI, and in them place the points N, J, K, and L, at a distance from their extremities equal to one-eighth their measure; next draw the square NJKL, and then erase the diagonals EH

and FI; next place points dividing each side of the square NJKL into three equal parts, and then draw the lines connecting these points in the order indicated by the numerals; next draw the lines lying near and parallel to the sides of the square EFHI; then erase the outline of the square ABCD, and, finally, add the shade-lines.

What should govern you in deciding upon the order in which shade-lines should be drawn?

In what order do you think the shade-lines should be drawn in this example?

What should govern you in deciding upon the order in which you should draw the lines lying near and parallel to the outline of the figure?

In what order should these lines be drawn?

LESSON III.

Ex. 1. *Where, in the sides AB and DC of the square, are the points E and F?*

Where, in the sides AD and BC, are the points K and W, P, and H?

In placing a point, as K, distant from A one-fourth of AD, do you first place a point in the middle of AD, and then place K half-way between this point and A? or do you place the point as near as you can judge without doing this?

The former course should be adopted.

What is the distance from E to I, compared with the distance from E to R?

How is this example to be drawn?

Draw the square ABCD; then place points dividing its vertical sides into four equal parts, and its horizontal sides into two equal parts; then, beginning with KF, draw the lines forming the triangles KPF and WEH, in the order indicated by the numerals; next place the point R so as to divide TJ into equal parts, and then place the point I on a line with E and R, and midway between them; then, in the angles K, W, F, H, and P, place points corresponding to I; next erase all lines that do not form a part of the figure; then, beginning at the upper part of the figure, draw the lines lying parallel to the outline on the left side, and then take those on the right; finally, strengthen all lines that may require it, and add the shade-lines.

In drawing the lines lying parallel to the outline, why should we begin at the upper part of the figure? and why draw those on the left before those on the right?

We should begin at the upper part of the figure, and work downward, in order that we may see what we have done as our work progresses; and, for the same reason, we should draw the lines on the left before drawing those on the right; and in addition to this, by taking this course, the hand is kept from coming in contact with the drawing.

Point out these lines in the order in which you intend to draw them, and state where you would begin, and where end, each line.

Point out the shade-lines in the order in which you intend to draw them.

Ex. 2. *Do the points L, J, and K, in the upper side of this figure, divide the side AB of the square into four equal parts?*

Do the points corresponding to these in the other sides of the figure divide the other sides of the square in the same manner?

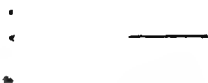
What is the distance from J to T, compared with the distance from T to V?

How is this example to be drawn?

Draw the square ABCD; next place the points that divide its sides into four equal parts, and then, in the order indicated by the numerals, draw the lines connecting these points; next place the point T on a line with J and V, and midway between them; next erase all lines corresponding to the dotted lines in the example; then, beginning at T, draw the lines lying parallel to the outline on the left; then, starting again at T, draw the lines lying parallel to the outline on the right side of the figure, and then, starting at the lower left-hand corner, draw those lying parallel to its lower side; next strengthen all lines requiring it, and, finally, add the shade-lines.

After the class has been instructed how to proceed in drawing the example, call upon the pupils to point out the lines in the order in which they are to be drawn, stating, at the same time, where they would begin, and where end, each line. In doing this, use the drawing on the board. After this has been done, call upon the pupils to state where they would begin, and how they would proceed, in drawing the

shade-lines. This should be done not only in this but in every example. There can be no readier, no surer way than this, by which the teacher can find out the points upon which the pupils need to be further instructed, if further instruction is necessary, before they are qualified to proceed to drawing.



LESSON IV.

Let the examples in this lesson be carefully studied, and the pupils thoroughly questioned.

Ex. 1. *How is this example to be drawn?*

First draw CD, and then place the point O in the middle of this line; next place the points A and B on a level with O, and at a distance from it equal the measure of CO, and then draw AB; next place the point E on a line with A and C, and midway between these points, and then draw EO. In drawing the remaining lines, proceed as suggested by the instruction given in drawing EO, drawing the lines in the order indicated by the numerals. When the lines have been drawn, place the point K in the middle of CO, and then place the point L in the middle of CK. In like manner, place the points in the lines AO, OB, and OD.

Ex. 2. It will be observed that the main lines in this example are in all respects like those given in Ex. 1; and it will also be observed that the same arrangement of lines has been adhered to in the minor parts of the figure.

How is this example to be drawn?

First draw the main lines, and place the points dividing the lines as instructed in Ex. 1; then, through the point corresponding to L, Ex. 1, draw the horizontal line UV, and then the inclined lines passing through this point. In placing the points for the extremities of these lines, proceed as in drawing the main lines of the figure; next, through the point corresponding to N, draw the vertical and then the inclined lines passing through this point, and then, in the same order, draw the lines passing through the point corresponding to R; next, through the point corresponding to T, draw the line as instructed in drawing those at the upper part of the figure; finally, guided by the lines already drawn, add the lines required to complete the figure.

Ex. 3. How is this example to be drawn?

Draw AB and CD, as instructed in drawing the lines corresponding to them in Ex. 1; then place the point E, and draw EO so as to make EO equal AO, and the angle EOA equal EOC. Having drawn EO, draw the lines OF, OH, and JO, in the order named, making them equal to AO, and so that all of the angles will be equal; next place points, as shown in the drawing, to mark the middle point of each line now drawn; then place the point V, and draw VO equal KO, and so that the angle VOC shall equal VOE; and, when this has been done, draw the remaining lines, making them equal to VO, and so draw them that all of the angles shall be equal.

It will be noticed that the points A, H, D, and the like,

in this example, are equally distant from O, and that they are equally distant from each other. These points may be connected so as to form a *regular octagon*.

In case it is required to draw an octagon without the aid of instruments, this is the most ready way to determine the eight prominent points in the figure.

Ex. 4. *How is this example to be drawn?*

Proceed as in Ex. 3, omitting the lines corresponding to VO; then, beginning at the point A, draw the detail on the left half of the figure; and then, starting again at A, draw that on the right. Before drawing these lines, carefully observe their direction. Take those starting at A, for example, and it will be seen that one line points towards J, and that the other points towards F.

After this example has been drawn, instead of drawing it again on the right half of the page, a new figure may be formed, in this way: proceed as in Ex. 3, and then draw lines connecting the points A and L, L and E, E and V; other points corresponding to these.

LESSON V.

In this lesson, we begin the study of *curved lines*.

What is a curved line?

A curved line is one whose direction is changed at every point. Any line that is not straight, nor composed of straight lines, is a curved line.

What means are used to ascertain the curvature of a line?

The line is compared with a straight line. In Ex. 1, the curved line ADB is compared with the straight line AB.

Curved lines are more difficult to draw than straight lines. It requires no great keenness of perception to see that a line is straight; but it does require a sharp eye to detect, at a glance, the exact sweep of a curve: and no greater mistake can be made than to assume that the pupil *must see* this because the line is before his eyes. Study alone will give the eye that keenness of perception necessary to enable him to do it. The common practice of allowing the pupil to proceed at once to drawing, without first making the example a study, is why so much time is spent in learning to draw. Pupils are permitted to draw too much; and they are required to study too little. It is an absurdity to suppose that any one can accurately represent a form of which he has no definite knowledge; and yet, in utter disregard of this self-evident truth, pupils are usually permitted to spend all the time devoted to drawing in attempting to do it. The great majority seem to act on the supposition that the power to draw resides in the *hand*, and not in the *head*. The hand needs discipline; but the eye, the organ through which the mind receives its knowledge of form, needs it a great deal more, in the great majority of cases. As a rule, there need be little anxiety that the hand will be found incompetent to perform all that the mind has the knowledge to direct.

On taking up a new example, call the attention of the class to every line in it; taking each line in its turn, question them in regard to all the facts connected with it; point out what they fail to notice, and, before they are allowed to put their pencils to paper, be sure that they have an accurate knowledge of the form to be represented, and that they understand what course to take in making the drawing.

Unless there is more than usual care exercised in drawing these examples, they will be very likely to be wanting in accuracy. The importance of requiring of the pupils all that it is reasonable to expect of them in this respect cannot be too strongly urged upon the teacher. A form something like the original is not enough. It should be as near like it as it is possible for the pupil to make it.

A curved line should not be drawn by making a series of dots; neither should it be made in little pieces. By this we do not mean that all lines should be drawn from beginning to end without taking the pencil from the paper. The idea that we wish to convey is, that each stroke should be as long as it can be conveniently made, all things considered.

In drawing these examples, let all lines be made very light at first, — just dark enough to be clearly visible; and let each stroke of the pencil, whether it be good or bad, remain until an accurate outline has been secured: then the true lines should be strengthened; and, when this has been done, the false should be removed. A false stroke has

its use: it serves as a guide to a correct one. With the false line before him, the pupil will be the better able to judge where the true line should be.

It is a common notion that all lines should be drawn *firmly*, and *at once*. It is said that Giotto once drew the outline of a circle with one stroke of his pencil. Whether this story is true or false, one thing is certain, — Giotto is the only man that ever had the credit of doing it. Where strict accuracy is required, the professional draughtsman, in drawing any form bounded by curved lines, always makes more or less false strokes; and this induces him to first sketch in the outline faintly, as we have recommended. This is the common practice where accuracy is demanded; and now, since this is so, is it not folly to ask a child, with hand and eye untrained, to attempt what those skilled in art cannot do?

In drawing a curved line, the motion of the hand should be sufficiently slow to allow the mind ample time to judge of its accuracy as the pencil moves from point to point. It is the mind that considers and determines the sweep of the curve, and the mind must guide and prompt the hand in drawing it. A bold and dashing line with the beginner is always a *reckless line*.

Before attempting to draw a curved line, care should be taken to have the hand and arm properly placed. If there is a failure here, the line cannot be drawn with ease, and therefore it is not likely to be well drawn. When the hand is on the paper, before making each stroke, go through the motion of drawing the line; and, if it cannot be made with

ease, change the position of the hand or arm, as may be necessary to secure the desired result.

Ex. 1. What is the purpose of the line AB in this example?

Is the curve in this line the same in all its parts?

Are the points A and B on the same level?

What point in the line is at the greatest distance from AB?

The point D is over what point in the line AB?

Where in the line AB is the point C?

What is the purpose of the line DC?

Compared with AC, what is the distance between the points D and C?

How is this example to be drawn?

Draw the guide-line AB; then place the point C in its centre, and at this point erect the perpendicular CD, equal in length to one-third of AC; then, starting at D, draw the curve to A, and then, starting again at D, continue the line to B.

Preparatory to drawing the line ADB, practise the hand on the movement necessary in making it. Hold the point of the pencil over D, in the *example*, very near, but not quite touching, the paper; then, with a steady motion of the hand, — the motion being from the wrist, — carry the pencil over the line to A, following it *accurately*. In doing this, it is quite likely that many of the class will find that they did not have either the hand or arm properly placed in order to draw the line with ease. Let this exercise be re

peated a reasonable number of times, that the hand may become somewhat accustomed to the motion required in drawing the line; and then, before drawing DB, pursue a similar course with that part of the line.

Ex. 2. This example is the reverse of Ex. 1. Question the pupils as in that example, before they are permitted to draw the line.

How is this example to be drawn?

Draw the guide-line EF, and place the point H in its centre; next draw HJ; then, beginning at E, draw that part of the line between E and J; and then, starting at F, complete the line.

In drawing the line from E to J, move the book a little farther to the left than usual, and place the elbow on the desk, so as to bring the thumb on a line with the guide-line EF. In drawing the part JF, let the book be placed as usual, and let the elbow be near the side.

Exs. 3, 4, 5, 6, 7, AND 8. To guide the class in drawing these examples, no further instruction is needed.

Exs. 9 AND 10. These examples, it will be observed, are but a combination of Exs. 1 and 2. They afford an illustration of the line known as Hogarth's line of beauty.

How should these examples be drawn?

In Ex. 9, draw the guide-line AB; then place the points F, C, and K, dividing it into four equal parts; next draw the perpendiculars DF and KJ; then, beginning at the

point A, draw the curves as instructed in Exs. 1 and 2. Ex. 10 should be drawn in like manner.

Ex. 11. *How should this example be drawn?*

Draw the lines AB and CD, making their extremities equally distant from V. Place the point F in the middle of AV, and then place the point X in the middle of AF. Through the point F draw EH, perpendicular to AV, making the part EF and the part FH equal FX, and then draw JL, RT, and NP, as suggested by the drawing of EH. In drawing the curved lines, proceed as indicated by the numerals.

LESSON VI.

The figures forming the examples in this lesson are called *circles*.

What is a circle?

A circle is a plane figure bounded by a curved line, every point of which is equally distant from the central point in the figure.

What is the curved line bounding the figure called?

This line is called the *circumference* of the circle.

What is any part of the circumference of a circle called?

Any part of the circumference is called an *arc*.

What is a diameter of a circle?

Any straight line passing through the centre of a circle, having its extremities in the circumference, is called a *diameter*.

What is a radius of a circle?

Any straight line drawn from the centre to the circumference of a circle is called a *radius*.

Ex. 1. How is this example to be drawn?

Draw the diameters AC and BD, making their extremities, A, B, C, and D, equally distant from E; next draw the guide-lines forming the square ABCD, and then place a point in the middle of each of these lines. Then fix in the mind the distance between the points F and K, and place the point F; next hold the point of the pencil over B, and, with the hand resting on the book, go through the motion of drawing the line from B to A. You may find that you have not placed your hand right, or that your arm is not in a position to enable you to draw the line with ease. When you are satisfied that you cannot improve the position of the hand or arm, draw the line from B to A, making it very light. Before proceeding farther with the outline, carefully examine what has been done. If, on examination, the line is found to be wrong in any particular, correct it. It may be necessary to draw many lines before the correct one is obtained; but, no matter how many may be made, let all remain until a perfect outline of the figure is secured. When a correct drawing of this part of the outline has been made, then place the point H, and draw the arc AHD; and, in doing this, pursue a course similar to that recommended in drawing the arc AFB. While drawing this line, let the eye occasionally take in all that has been drawn of the outline, that you may be the more certain of keeping the sweep

of the line the same throughout. When the outline has been drawn to D, begin at B, and complete the circle, pursuing a course similar to that recommended in drawing BFAHD. After the outline has been struck out in this way, carefully examine it, holding the book upright, so that you may look perpendicularly upon the plane of the paper, and at some little distance from the eye, so that the entire outline of the figure may be distinctly seen at one view. If found to be imperfect in any of its parts, alter the line, and, when it is supposed to be correct, slightly strengthen the true line; then, using the rubber lightly, erase all but the outline (and, in doing this, no especial care need be exercised to avoid touching this line; for, since it is stronger than the others, it will be visible after they have disappeared); and, when this has been done, strengthen the outline.

To avoid repetition, let it be understood hereafter, that, when a correct outline of any figure has been secured, the true lines are to be slightly strengthened, guide-lines and all lines incorrectly drawn are to be erased, and then the outline is to be again strengthened, as here recommended.

EXS. 2 AND 3. It is intended that these examples should be drawn without the aid of guide-lines, other than those given. The drawing of Ex. 1 will suggest where to begin, and how to proceed, in drawing these figures.

LESSON VII.

Ex. 1. *How is this example to be drawn?*

Draw the guide-lines AB, CD, EF, and HJ, in the order named, and place the points K, N, P, and O in the middle of the lines AV, CV, VB, and VD. It will be observed that the lines corresponding to EV equal KV, one-half of AV. In drawing the curved lines, proceed as indicated by the numerals.

Ex. 2. *How is this example to be drawn?*

Draw the guide-lines AB and CD. Place the points L, N, P, and O, dividing the lines AK, CK, KB, and KD into equal parts, and then place the points E, F, J, and H, dividing LK, NK, KP, and KO into equal parts. By this arrangement, we locate four prominent points in each of the curved lines forming the figure. Having placed the points named, draw the curved lines passing through them in the order indicated by the numerals.

LESSON VIII.

Ex. 1. *How is this example to be drawn?*

Draw the guide-lines AB and CD, and then place points dividing AO, CO, OB, and OD into three equal parts. Then draw all lines corresponding to HF, JK, and NL, and

finally draw the curved lines, beginning at the upper part of the figure.

Ex. 2. *How is this example to be drawn?*

Draw the guide-lines forming the square ABCD, and place points dividing each side into four equal parts; then draw FO and SK. Place points dividing each half of FO and SK into four equal parts, and then draw the lines corresponding to EU and HU; then those for the curved lines in the centre of the figure, and finally draw the curved lines, drawing the larger curves first.

LESSON IX.

The figures forming the examples in this lesson are called *ellipses*.

No definition of this figure can be given that will convey to the mind of the pupil so clear an idea of its form as he may obtain from a careful study of the figure itself.

In directing the attention of the class to the peculiarities of this figure, it is very desirable that a drawing of it be made on the board. Then, by pointing to that part of the outline to which the instruction refers, there can be no misunderstanding in regard to the particular part referred to, which would be very likely to be the case if the example in the book were used for this purpose.

Ex. 1. *What is the length of BD, the short diameter of the ellipse, compared with AC, its long diameter?*

Starting at B, describe the curve of the arc BFA as correctly and as minutely as you can.

Is the arc BHC exactly like the arc BFA?

Is the outline of the lower half of the figure exactly like that of the upper half?

How is this example to be drawn?

Draw the diameters, and then draw the guide-lines; next place the point F to mark the point in the arc AFB, that is, at the greatest distance from the guide-line AB, and then draw the arc AFB; then, pursuing a similar course, draw the arc AKD; next draw BHC, and then CJD.

Ex. 2. *How is this example to be drawn?*

First draw the guide-line AB; then place the point J in the middle of this line, and then place the point C so as to divide JB into equal parts. Guided by AB, draw the guide-lines DE and FH; and then, without the aid of other guide-lines, draw the two ellipses. Before the outline is strengthened, the guide-lines, and such parts of the ellipses as do not form a part of the figure, should be erased.

LESSON X.

The figure given in Ex. 1 is called an *oval*.

What is an oval?

An oval is a plane figure, resembling in shape the longitudinal section of an egg.

Ex. 1. *Is the arc BAD, in this example, exactly like the arc BCD?*

What points in these arcs are at the greatest distance from the line BD?

Is the line AC perpendicular to BD?

Compared with EB, what is the distance from E to A, and from E to C?

What is the distance from B to E, compared with BD?

What part of the outline is like the arc of a circle?

Compare the arc ADC with the arc BAD in Les. ix., Ex. 1, and point out the difference between them.

How is this example to be drawn?

Draw the line BD, and place points dividing it into three equal parts; then place the points A and C on a level with E, and distant from it equal to the measure of BE, and then draw AC; next draw the guide-lines; then draw that part of the outline lying above AC, and in doing this proceed as in drawing a circle; then draw the part lying below AC, drawing AD and then CD.

In the examples that follow in this lesson, the *Vase* forms the subject. The oval, or egg form, is more frequently employed than any other in the construction of this class of ornaments. The figure is an ornament of itself. It is full of beauty; and so apparent is this, that even the dullest eye sees something to admire in the sweep of its outline.

The vase has three principal parts, known as the *body*, the *foot*, and the *neck*. The opening at the top of the vase is called its *mouth*. The body is that part lying between the lines CD and FI; the part below the body is the foot; the part above, the neck.

That a vase may be beautiful, there is no fixed length that its parts must have as compared with each other: still, if all of its members be of equal length, the law of variety is violated, and the vase is not beautiful. Variety is an essential element of beauty. Speaking in general terms, we may say that the body may be longer or shorter than the neck; but the foot, at most, should not much exceed one-third the length of the body; and, to satisfy the laws of stability, the breadth of this member should correspond to the breadth and height of the other members. If the neck is short, the mouth should be large; and if it be long, the mouth should be small. Guided by these suggestions, it may be a useful and a pleasant exercise for the pupils in their leisure moments to exercise their inventive powers in attempting to produce forms unlike those given in these examples. For the body of the vase, any one of the primary forms given in the previous lessons is appropriate.

Ex. 2. Compared with the body, what is the length of the neck? and what is the length of the foot of this vase?

Does the line AB pass through the centre of the vase?

What is the distance of K from A, compared with the length of the neck?

What is the distance of O, the nearest point in the out-

line of the neck, to the guide-line AB, compared with the length of the neck?

What is the distance of C from E, compared with the length of the body?

What is the distance of F from J, compared with the length of the foot?

What is the distance from N to B, compared with the length of foot?

Is the right side of the vase exactly like the left side?

How is this vase to be drawn?

Draw the guide-line AB, and place points in the line, dividing it into five equal parts; then place the points K and L on a level with A, and at a distance from it equal to the measure of AE, and then draw KL; next place the points C and D on a level with E, and at a distance from it equal to one-half the measure of EJ, and then draw CD; then draw the guide-lines CJ and DJ; next place the points F and I on a level with J, and at a distance from it equal to one-fourth the measure of JB, and then draw FI; next place the points N and R on a level with B, and at a distance from it equal to the measure of JB, and draw NR. Beginning at the top of the vase, draw the line lying near and parallel to KL, and then draw the curved lines connecting the extremities of these lines; next place the point P in the centre of AE, and then place the point O on a level with P, and at a distance from it equal to the distance of P from A, and then draw the curved line forming the outline of the left side of the neck; then, in like manner, draw the outline of the right side of the neck; next draw the

curved line forming the outline of the left side of the body, and then draw that on the right. In drawing the foot, proceed as suggested by the course adopted in drawing the neck.

Ex. 3. Having drawn the vase in Ex. 2 as directed, the proper course to pursue in drawing this example will at once suggest itself to the teacher. Before the pupils are allowed to draw the vase, question them thoroughly in regard to all the facts connected with it.

LESSON XI.

Ex. 1 represents a leaf of the chestnut; Ex. 2, a leaf of a plant called the arrow-head; Ex. 3, a leaf of the German ivy; Ex. 4, a leaf of the English ivy; Ex. 5, a leaf of the geranium.

In drawing a leaf, first make a light single line to represent the vein which runs from the stem of the leaf to its apex; then, where there are other prominent veins, as in the ivy and in the geranium, sketch them in, in the same manner; then, guided by these lines, sketch very lightly the main outline of the leaf, paying no regard to the minor detail; and, when this has been done, give the outline its true character; finally, carefully draw the large veins, then add the smaller veins and the shade, if any is to be given to the drawing.

After these examples have been drawn, let the pupils draw from actual leaves, care being taken to select those of simple form.

LESSON XII.

Ex. 1. The leaves represented in this example are those of the rose. Represent the stem by a simple line, and then proceed as instructed in the previous lesson.

Ex. 2. First sketch the main leaf and stock; then, by a single line, represent the branch leading from the main stock; then draw the leaves connected with it, and complete the outline of the branch; add the tendrils, then the blossom and the fruit, and finally the minor detail of the parts.

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